

Tiwaporn Prommarat 2006: Development of Instant Hand Sanitizer Using *Curcuma longa* L. Extraction. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Assistant Professor Walairut Chantarapanont, Ph.D. 135 pages.

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The aim of this research was to study the appropriate methods and conditions for extracting antibacterial agent from *Curcuma longa* L. to study amount of major components of turmeric crude extract for using as antibacterial agent in instant hand sanitizer, to study development of Instant Hand Sanitizer using *Curcuma longa* L. extraction and to study quality of final product. Results of extraction method demonstrated that Soxhlet extraction was the most appropriate method. The appropriate condition was extraction turmeric rhizome with 95% ethanol for 6 hours. The yield of crude extract was 23.75%. The major components of the crude extract analyzed by GC-MS method were Beta-Tumerone 50.14%, AR-Tumerone 27.16% and Alpha-Tumerone 22.70%. The Minimum Bactericidal Concentrations (MBCs) of the crude extract by Broth dilution method could inhibit growth of 10 strains of tested bacteria was 0.064 mg/ml. This concentration was the minimum crude extract concentration being added in instant hand sanitizer for inhibit hand flora. Results of consumer survey showed that the target consumer of instant hand sanitizer was the woman consumers in the age of 20-40 years. The final formula contained water 51.2 %, Carbopol 0.45 %, 70% Ethanol 46.4 %, turmeric extract 0.0064 %, Triethanolamine 0.45 %, Cremophor RH-40 1% and fresh floral scent 0.5 %. This product has L\* a\* b\* values of 16.35, -5.77 and 26.25, viscosity of 1367 cP, pH value of 6.7, total colony count <1000 CFU/g, Coliform bacteria <10 MPN /g and no *Staphylococcus aureus*, *Salmonella* spp. and *Escherichia coli* in the product. Results of cooling – thaw cycle showed that the final formula was consistent gel. Washing hand twice with final product could reduce hand flora for 100 % tested by glove juice method. The consumer test showed that the consumers liked the product slightly to moderately with 94 % acceptance. After product being stored for 4 weeks at room temperature, 35°c and 45°c, the viscosity of gel was increased in the first three week and was decreased in last week, L\* and b\* was decreased, a\* and pH value was increased. 0.0064 % of the extract concentration in the product could inhibited hand flora all storing times. The consumers liked the product that was stored for 4 weeks slightly to moderately.

Tiwaporn Prommarat

Student's signature



Thesis Advisor's signature

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